

Further Observations on the Species of *Utetheisa*
Huebner (Lep.: Arctiidae) in the Western and
Central Pacific with the Description of a New Species
from Niue Island

(Concluded from Vol. 91, page 322)

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Description of new species

Utetheisa maddisoni sp. n.

♂. Wing-span 37-38 mm (Pl. IX, fig. 14). Vertex bright yellow with patches of red; frons yellowish white with large central black spot; underside of head whitish. Antenna (fig. 1) with deeply dentate segments, each with a whorl of cilia and a pair of lateral setae. First segment of labial palpus with ventral brush of yellow scales, second segment yellow with red spot on outer surface, third segment black. Patagia bright yellow with anterior black spot. Thorax and tegula yellowish white, bright yellow anteriorly, patterned with black spots. Forewing yellowish cream, patterned with black and crimson. Hindwing white with broad charcoal-grey terminal fascia; anal angle with fold containing yellow scent-scales. Abdomen white. Legs white, marked above with black, foreleg with some yellow scales.

♀. 36-41 mm. Of similar pattern to ♂ but vertex with black spot and without red scales. Hindwing without fold and scent-scales.

GENITALIA ♂ (Figs. 2, 3). Similar to genitalia of *U. salomonis* Roths. and *U. clareae* Robinson but uncus tapered at apex to curved point. Tip of valva slightly concave. Vesica with scobinate medial zone and group of thorn-like cornuti opposite aperture of ductus ejaculatorius; cornuti of second (lateral) group small, short and numbering only about 20.

GENITALIA ♀ (Fig. 4). Similar to genitalia of *salomonis* and *clareae* but emargination of seventh and eighth sternites extending almost one-half length of antrum, deeper and broader than in *salomonis* or *clareae*. Posterior region of ductus bursae near junction with ductus seminalis sclerotized, smooth, lacking spines.

LARVA (Pl. IX, figs. 17, 18). Base colour pale lemon-yellow with black patterning. Dorsal stripe continuous; sub-lateral line of conspicuous whitish bars. Head light tan with dark brown markings on epicranial plates bordering medial and adfrontal sulci and around ocelli. Foodplant: *Messerschmidia argentea* (Linn. f.) Johnston (Boraginaceae). Feeds on upper epidermis of leaves, cutting through the whole leaf only in the later instars.

REMARKS. *Utetheisa maddisoni* is closely allied to *U. salomonis* Rothschild (Plate IX, fig. 13), but males of the latter species lack a fold of scent-scales in the hindwing. The black

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hindwing markings of *maddisoni* are not as extensive as those of *salomonis* and both sexes of the latter have a large black spot on the vertex and no red scales. The male genitalia of the two species are similar but the apex of the valva is concave in *maddisoni* and convex in *salomonis* and the uncus of the latter is cygnate but tapered in *maddisoni*. The lateral group of thorn-like cornuti on the vesica of *maddisoni* is smaller, the of cornuti and the tip of the uncus is cygnate as in *salomonis*. the female genitalia have a large patch of thorn-like signa anterior to the junction with the ductus seminalis at the posterior end of the ductus bursae: this group of signa is absent in *maddisoni*. *Utetheisa clareae* Robinson has less heavily marked and more rounded forewings than *maddisoni* and the red of the forewings is paler. The vesica of *clareae* has only one group of cornuti and the tip of the uncus is cygnate as in *salomonis*. The antennal segments of *maddisoni* are deeply dentate and similar to those of *clareae* and *salomonis* but much broader than in *U. pulchelloides marshallorum*. The red forewing markings of *maddisoni* are crimson, a warmer tone than in *marshallorum*; the red of *clareae* is scarlet, that of *salomonis* dark scarlet.

The larva of *maddisoni* is of similar appearance to that of *clareae* but the black markings are more extensive, particularly on the sides (compare pl. X, fig. 4 in Robinson & Robinson, 1974). The ground-colour of the larva of *salomonis* is orange-brown and the dorsal stripe is discontinuous.

DISTRIBUTION. Niue Island.

MATERIAL EXAMINED

Holotype: ♂, NIUE I.: 23.ix.1975 (*Maddison*) (BMNH).

Paratypes: 7 ♂, 9 ♀, 1 larva, data as holotype; 1 ♀, NIUE I.: Alofi, 2.iv.1975 (*Dugdale*); 2 ♂, NIUE I.: Amanau, 14.vi.1975 (*Maddison*); 2 ♂, NIUE I.: Amanau, 16-17.iv.1975 (*Maddison*) (BMNH).

General Observations and Discussion

Although we have made field collections of some dozens of eggs and larvae of *salomonis*, *clareae*, *stigmata* and *marshallorum*, none have ever been found to be parasitized and the agents of larval mortality remain undetected. It is possible that small climbing crabs, frequently observed on *Messerschmidia* bushes, may feed on larvae and pupae.

Both H. S. Robinson and Dr. P. A. Maddison have observed that, when populations of *Utetheisa* larvae on *Messerschmidia* grow to high levels, great numbers of larvae are attacked by a white fungus which affixes them to leaves and twigs and ultimately engulfs and destroys them.

The frass of larvae of *clareae* has a strong and extremely unpleasant smell, reminiscent of rotting fish. This is so pronounced that where there is a large larval population the smell can be detected some distance from the bushes on which the larvae are feeding. This odour has not been observed in other species and is definitely not produced by the frass of larvae of *marshallorum*, a species which we have bred in large numbers.

The outlines of the biogeography of the Pacific *Utetheisa* species have already been discussed (Robinson, 1971). The discovery of *maddisoni* strengthens the conclusion that the *salomonis*-group species (*salomonis*, *clareae*, *maddisoni*) were early colonizers of the Melanesian Arc, Fiji and New Caledonia and restricted the subsequent spread of *marshallorum* by monopoly of the only available foodplant. The island groups (Lau and Tonga) separating the populations of *clareae* (E. Fiji) and *maddisoni* (Niue) are less than a million years old and do not harbour *salomonis*-group species. The islands on which the *salomonis*-group species are found are older (with the exception of parts of the New Hebrides chain) than Lau and Tonga and it is reasonable to suppose that *maddisoni* reached Niue before seafloor spreading began along the Lau-Colville Ridge with the genesis of the Lau and, later, Tonga groups (Robinson, 1975).

U. p. marshallorum has a much wider geographic range than the *salomonis*-group and its local populations have developed their own typical colour-pattern. It is likely that many of these populations are temporary — *marshallorum* is now absent from Tarawa but was collected from that atoll in 1951. There are no apparent trends in the variation of the different *marshallorum* populations. At first sight, specimens from atolls appear larger than those from 'high' (volcanic) islands, but specimens from the Phoenix Islands are an exception to this. It is not at all clear to us why, for example, specimens from the Cook Is. have 'extra' black and specimens from Napuka I. have 'extra' red but specimens from Caroline I. show both extremes of variation in forewing pattern. These isolated populations were established perhaps by only a single 'ancestor' and, being small colonies, have inbred thus consolidating a pattern peculiar to each colony. Marked variability within a colony would be due to a sudden expansion of the population or the addition of 'new' genetic material by immigration: the cause of variability within (for example) the Caroline I. colony is unknown.

The various Pacific species of *Utetheisa* are not easy to identify in the absence of comparative material. Females, lacking the antennal and secondary sexual characters of the hindwing, pose a greater problem than males and we have refrained from constructing a key for females as we believe it would smack of an authority which, in reality, it lacked. Identification is best begun by examination of males and comparison with the illustrations here and in earlier works (see the bibliography).

Erratum

In couplet 5 of the key (above — p. 271), read 'margin' for 'markings'.

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Current Literature

A Field Guide to the Smaller British Lepidoptera by Members of the British Entomological and Natural History Society. Edited by A. M. Emmet. 271 pp., stiff wrapper. Edition limited to 1,000 copies. Published by the Society. Obtainable from R. F. Bretherton, Folly Hill, Birtley Green, Bramley, Guildford Surrey, GU5 0LE. Price £9 (plus 75p postage and packing). Special price to members £6 (plus 75p postage and packing).

Founded on the late L. T. Ford's *Guide to the Smaller British Lepidoptera* (1949) and *Supplement* (1958), the work under review is similar in format, but differs notably regarding the use of taxonomic arrangement, revised nomenclature, details of species since added to the British list and the addition of much fresh information on those already included.

The book begins with a list of contents, short introduction and list of abbreviations, symbols, etc. (pp. 5-10). Then follows the main body of the work (pp. 11-228), in which altogether 1,501 numbered species are treated, with the original numbers in Ford being entered in parenthesis. The work concludes with two indices: one to foodplants and other food substances and situations (pp. 229-246); the other of families, genera and species (pp. 247-271).